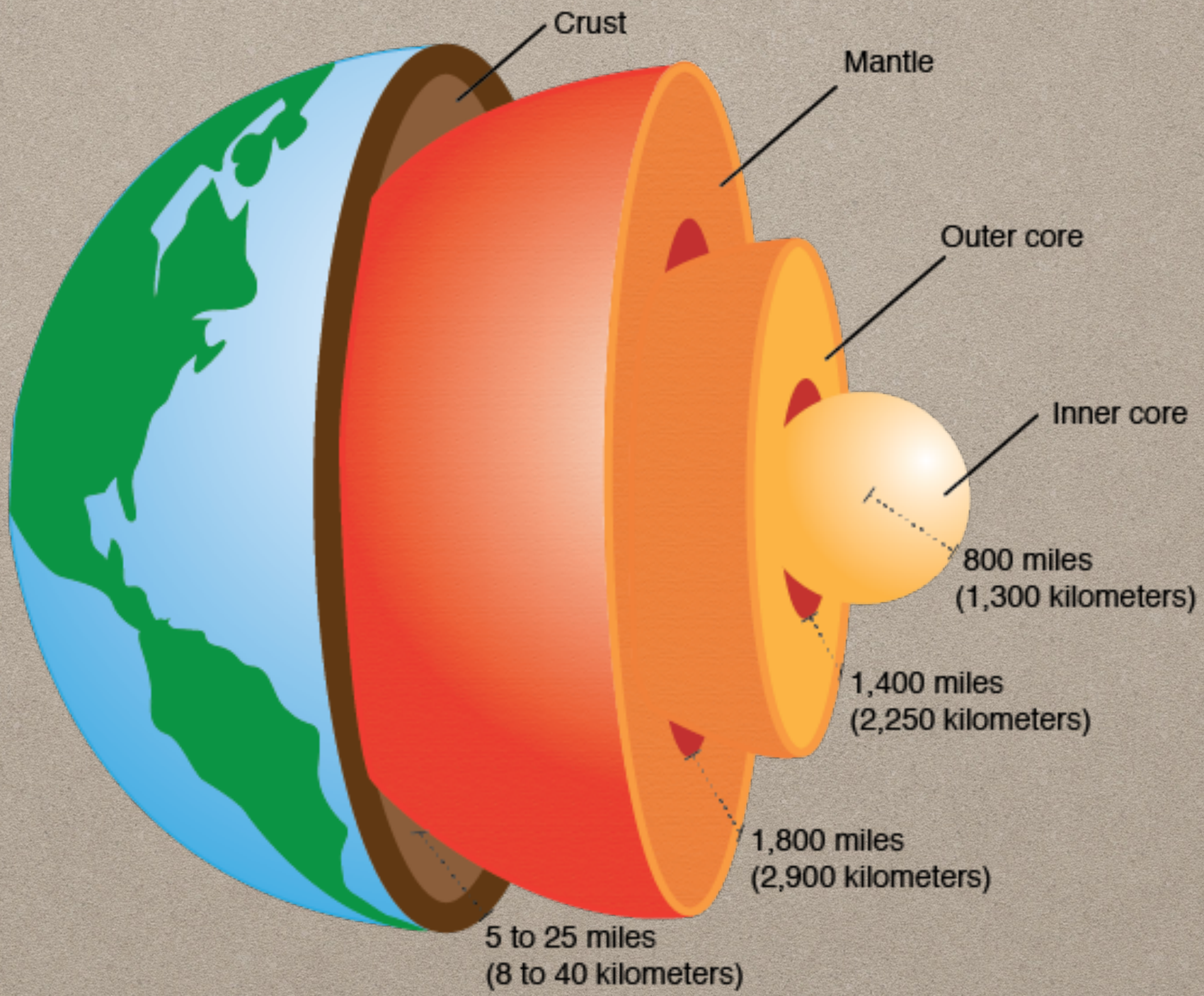
GEOLOGICAL HISTORY

CGC1D1-MR. A. WITTMANN-UNIT 2: NATURAL SYSTEMS

Structure of the Earth

The Earth is made up of a series of layers



INNER & OUTER CORE

- The entire core extends to 1/2 the radius of the Earth.
- It is very dense with an very high temperature.
- Made mostly of iron and nickel.
- Generates the Earth's magnetic field.
- Outer core is liquid molten.
- Inner core is solid due to the high pressure.
- In the inner core, decay of radioactive elements, like uranium, generate intense heat.

MANTLE

- The mantle extends 2,900 km from the core to the crust.
- Mostly a semi-molten liquid magma upon which the Earth's crust floats.
- The upper mantle is called the **asthenosphere**, where convection occurs.
- The heat coming from the core generates convection currents in the viscous mantle that cause the crust above to move.

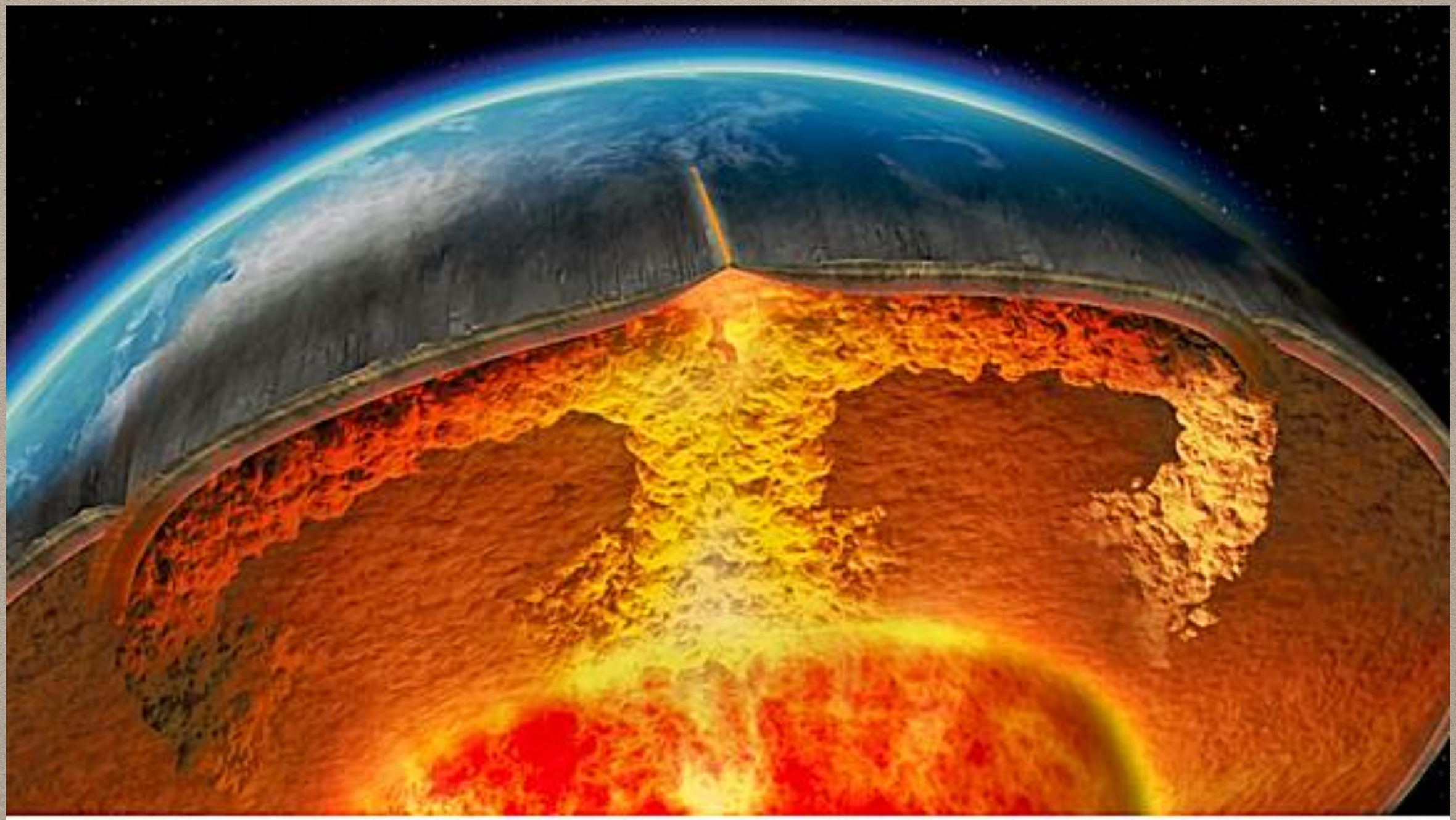
CRUST

- The crust is the thin layer of rock at the surface upon which we live.
- Also known as the **lithosphere.**
- Where the crust and mantle meet and where new crust is created.
- Eight elements make up over 98% of the Earth's crust, although they are virtually entirely in the form of compounds.

PLATE TECTONICS

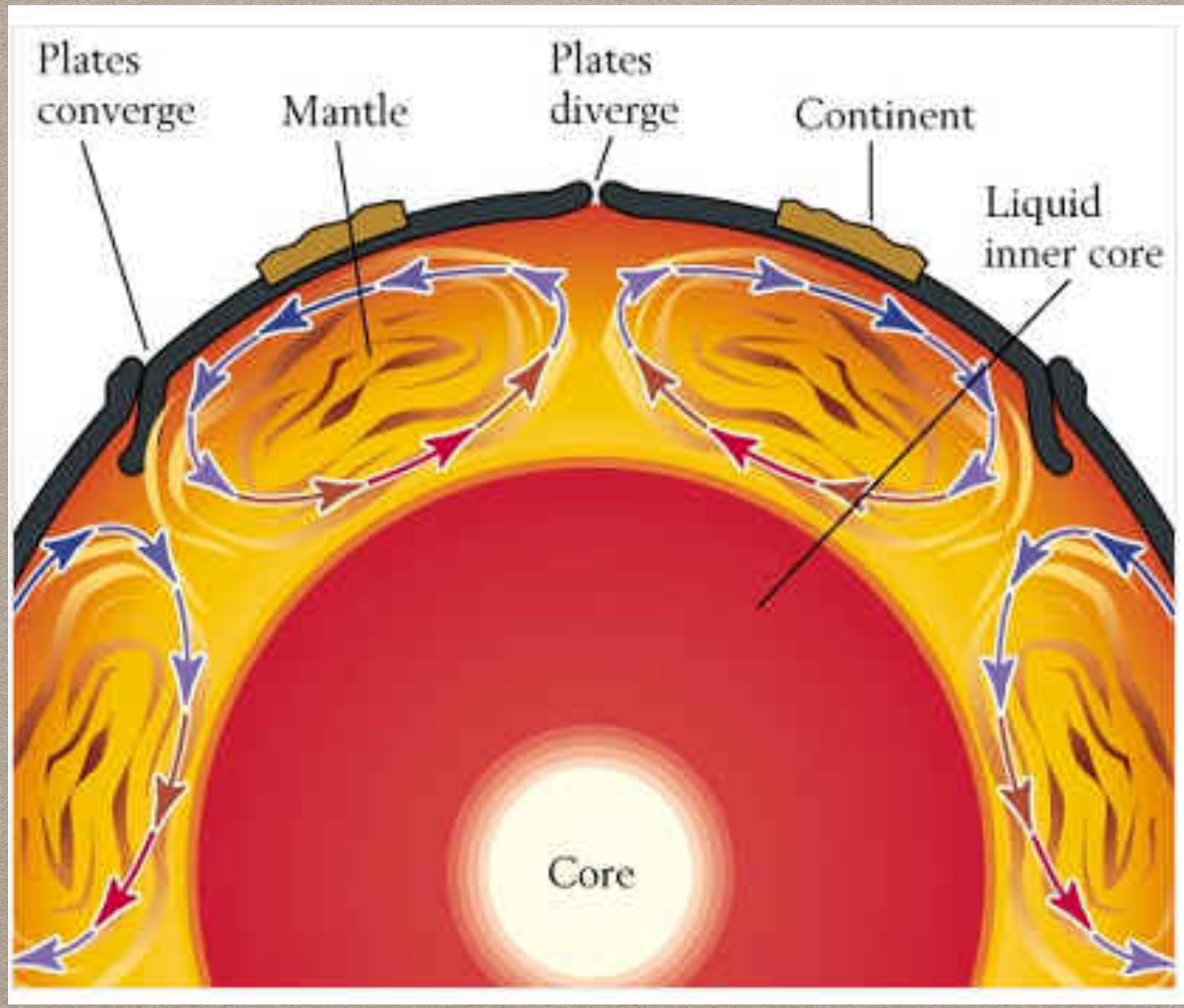
- Developed in 1968 by J. Tuzo Wilson this theory describes the large-scale motion of Earth's lithosphere.
- The earth’s crust is made of about 15 plates.
- These plates float on the semi-molten mantle.
- Convection currents within the mantle move the plates.
- But they only move about 2-4 cm per year.
- This can have huge effects over long periods of time.

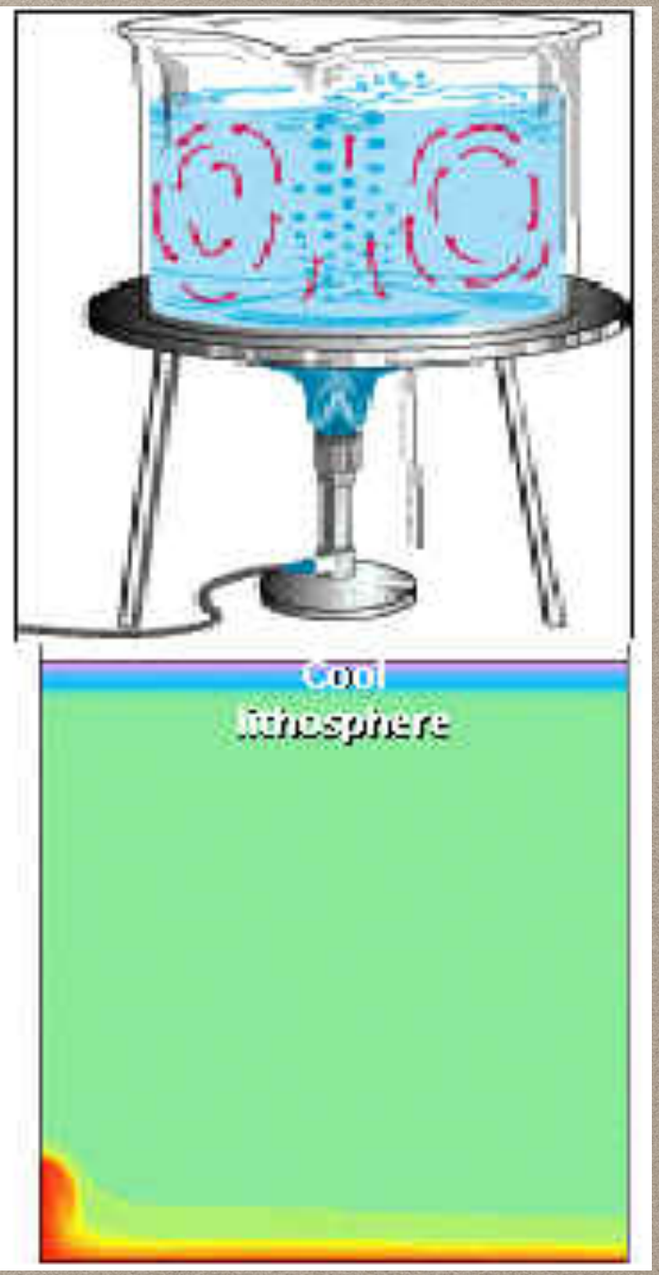
CONVECTION CURRENTS



National Geographic / National Geographic

CONVECTION CURRENTS





TECTONIC PLATES

- This map shows the distribution of the world's tectonic plates.

CONTINENTAL DRIFT

- Theory developed in 1915 by Alfred Wegener.
- Explains the why continents of the Earth look like they fit together.
- Scientists think the continents were originally all together in a super-continent called **Pangaea**.
- Over millions of years they have drifted to their present positions on the floating tectonic plates.

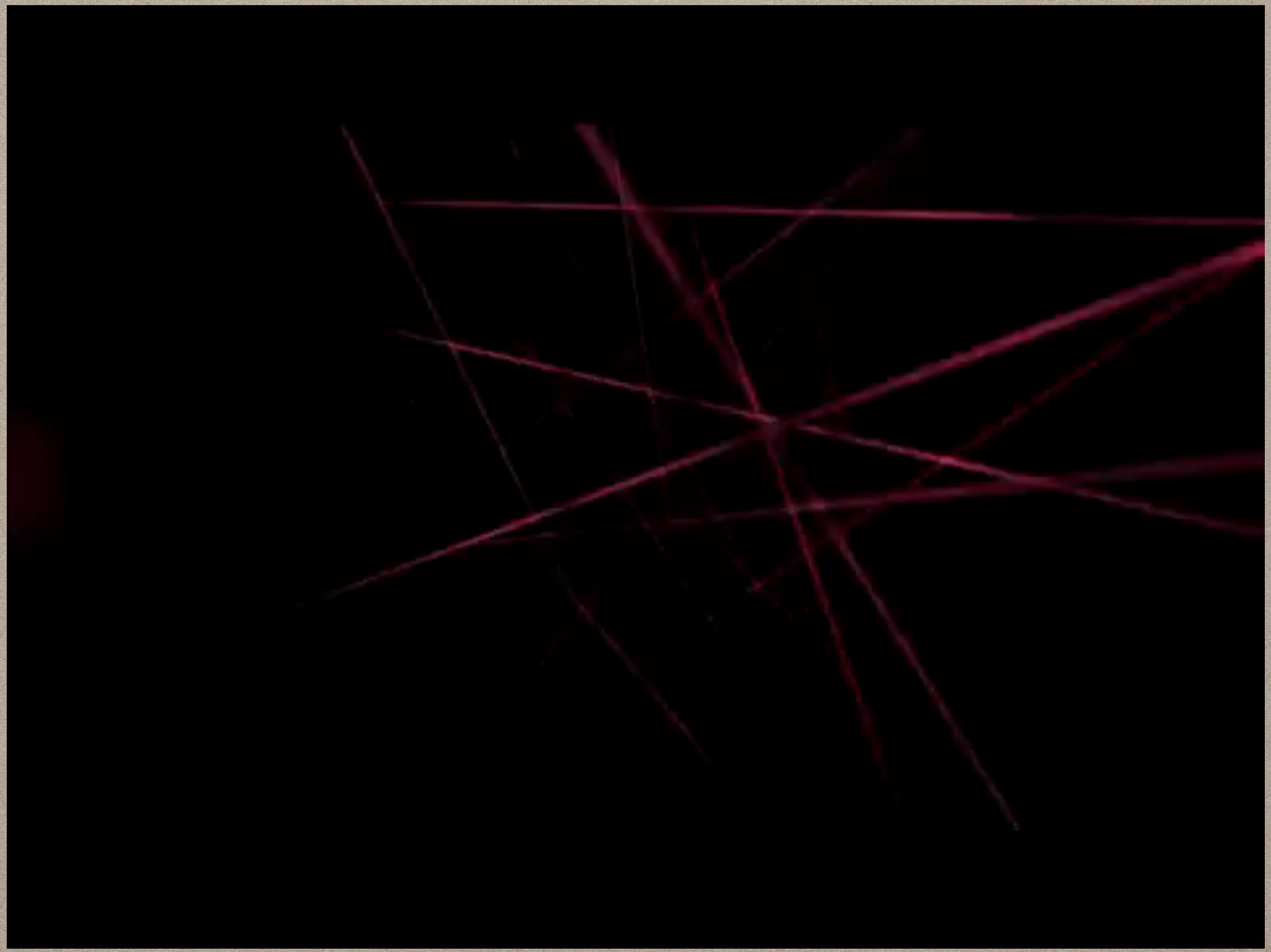
CONTINENTAL DRIFT

225 million years ago

150 million years ago

100 million years ago

Earth today



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